

No. 753,509.

PATENTED MAR. 1, 1904.

C. K. MUNNS.  
ELECTROTHERAPEUTIC DEVICE.

APPLICATION FILED OCT. 24, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

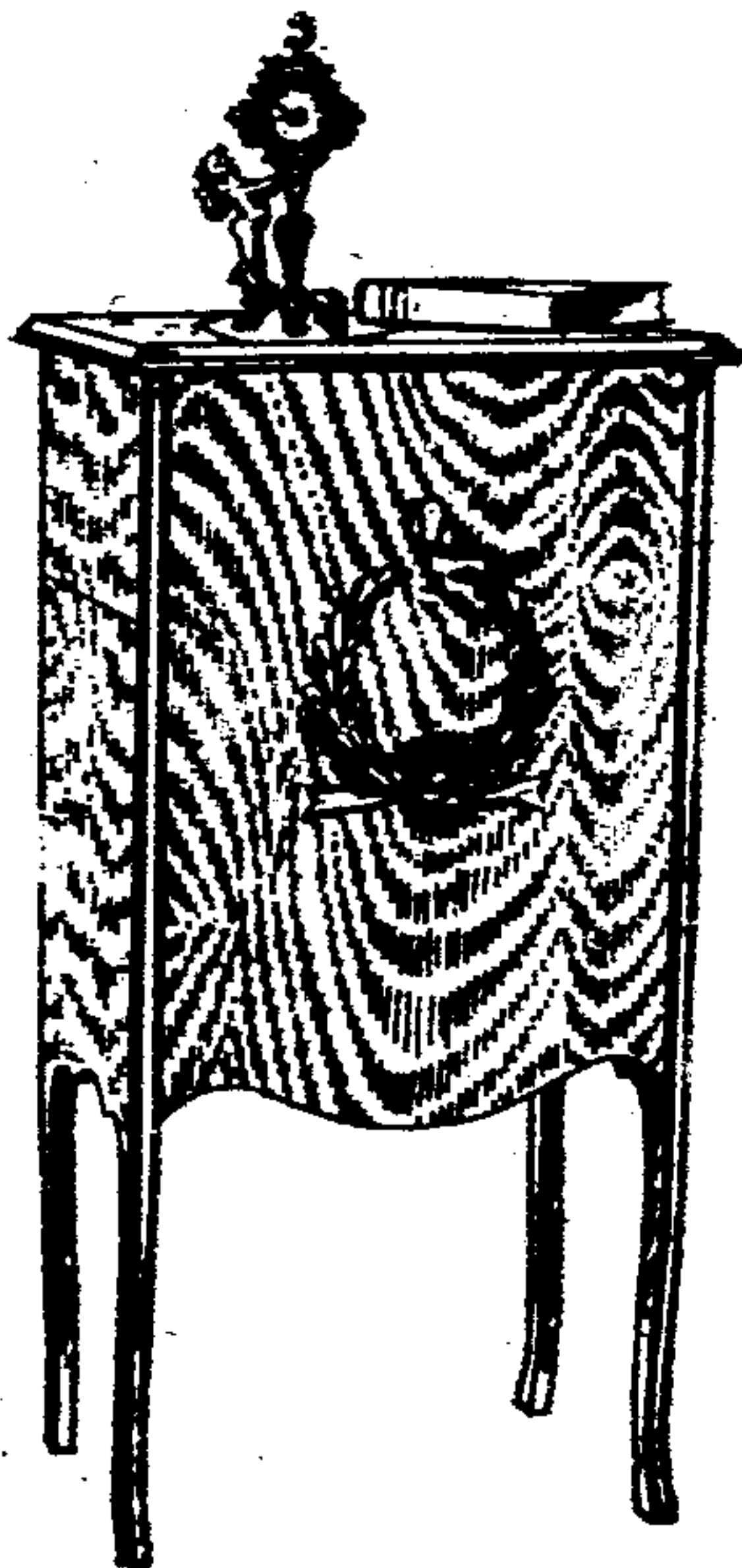


Fig. 1.

Fig. 2.

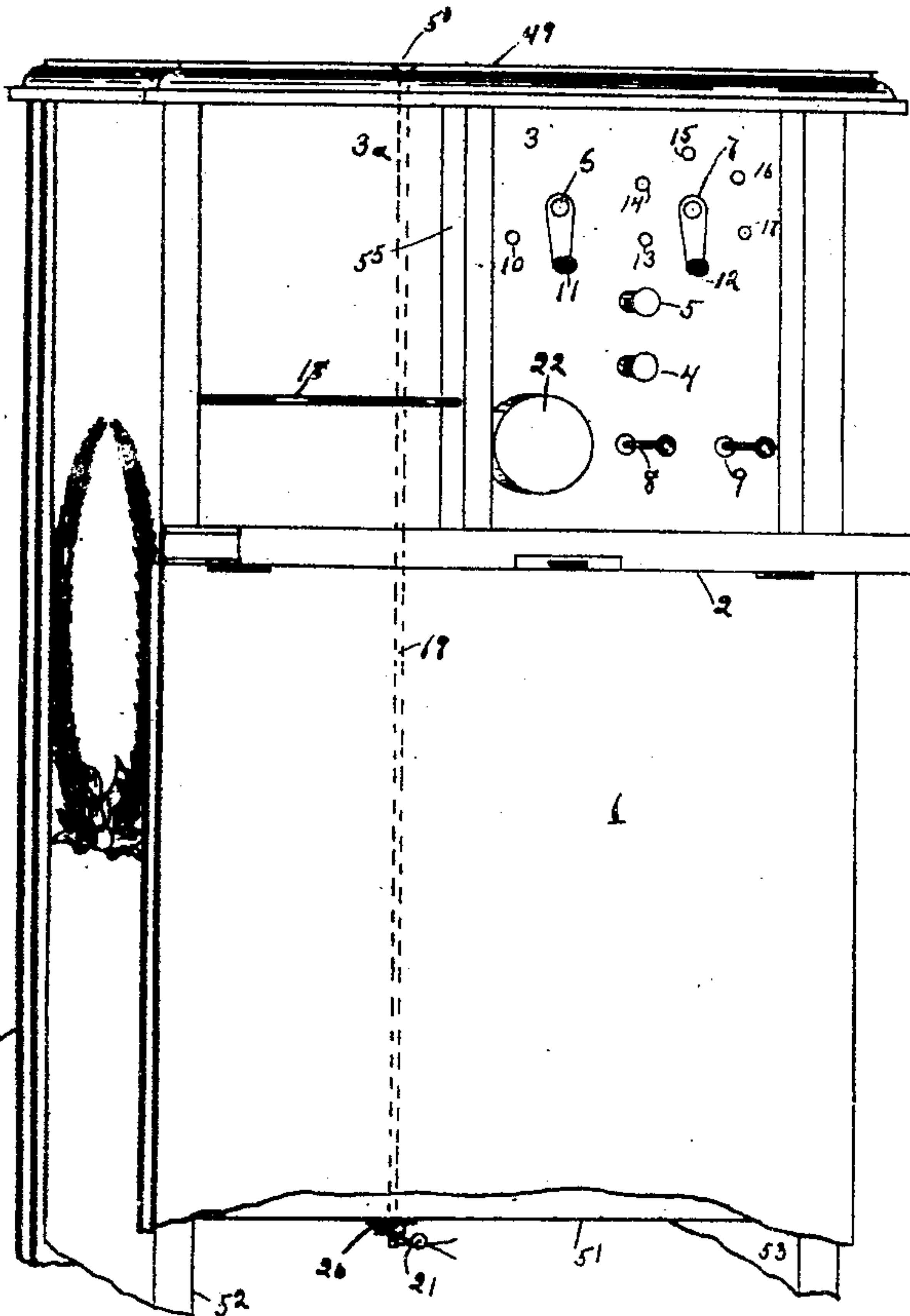


Fig. 3.

Witnesses:

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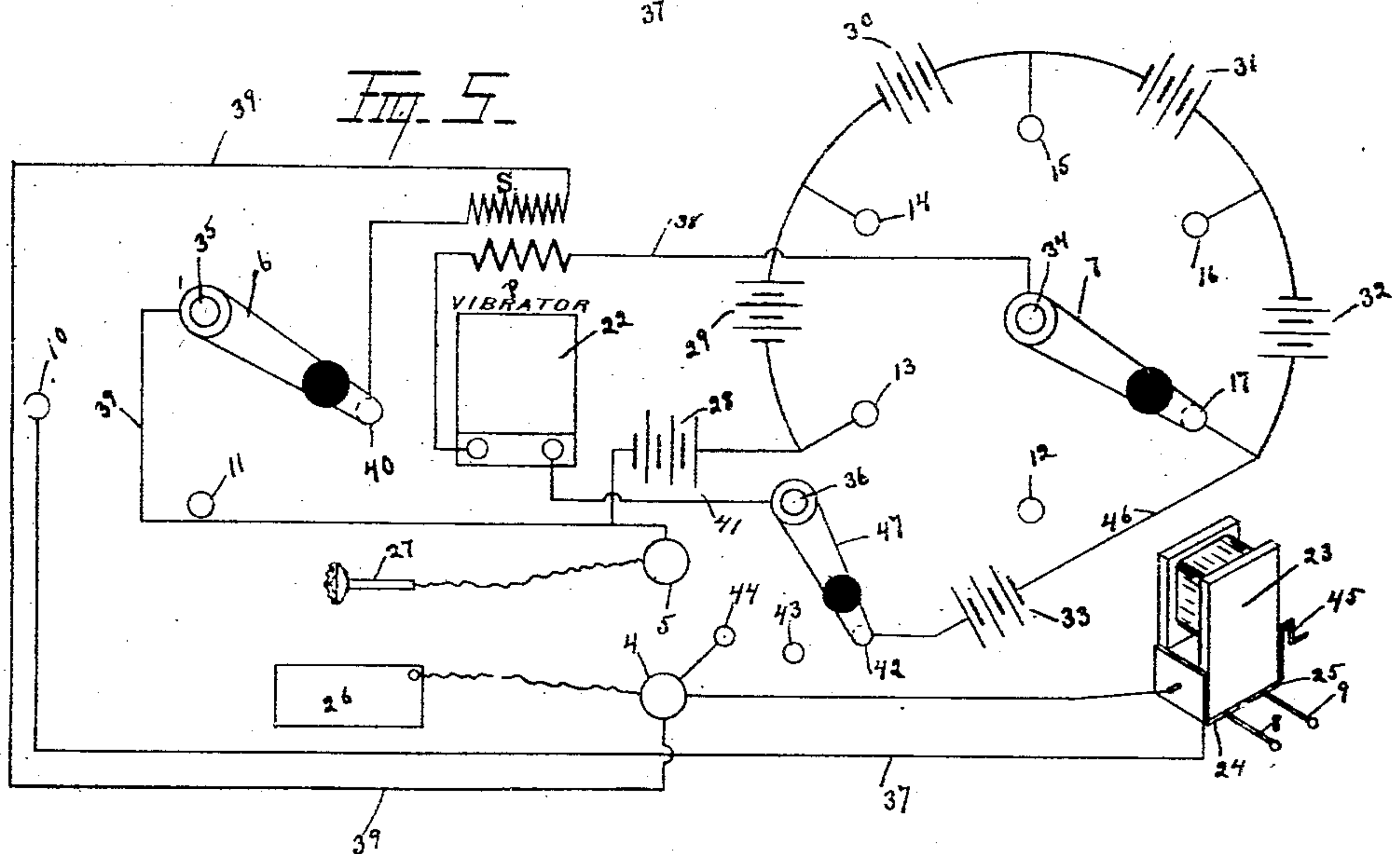
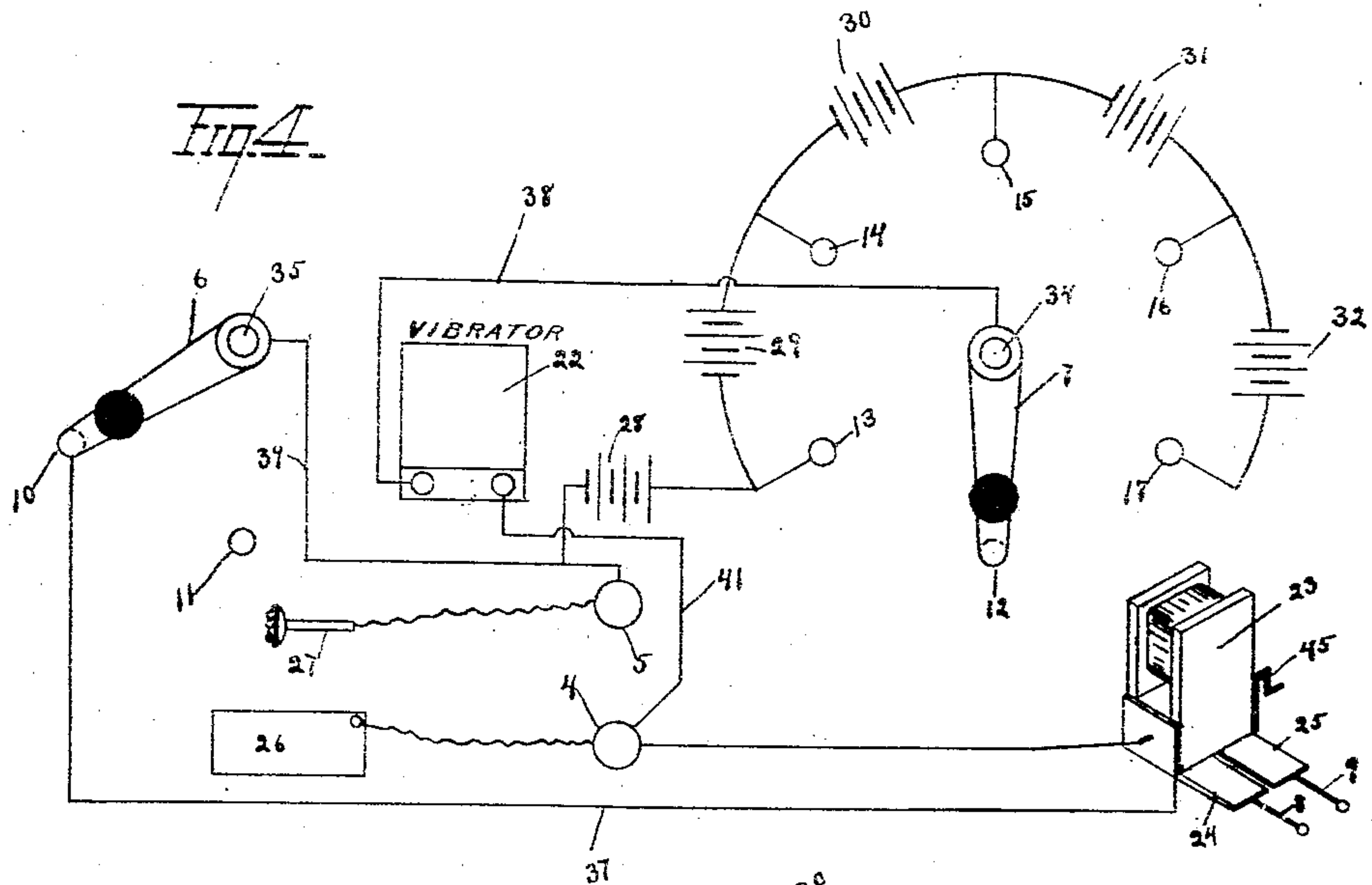
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2 SHEETS—SHEET 2.



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Frank E. Jones

A. J. Parker.

Inventor.

Charles K. Munns



# UNITED STATES PATENT OFFICE.

CHARLES K. MUNNS, OF CORNING, IOWA.

## ELECTROTHERAPEUTIC DEVICE.

SPECIFICATION forming part of Letters Patent No. 753,509, dated March 1, 1904.

Application filed October 24, 1903. Serial No. 178,419. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES K. MUNNS, a citizen of the United States, residing at Corning, in the county of Adams and State of Iowa, have invented certain new and useful Improvements in Electrotherapeutic Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use same.

My invention relates to an improvement in devices for the application to the body of electricity for the curing of disease; and it consists of a cabinet within which the necessary apparatus is inclosed, means within for generating electricity and delivering it in graded strength in galvanic, sinusoidal, and faradic form by means of a switchboard having upon it switches and necessary contact-points, buzzer, regulating-rods and binding-posts, to which are connected electrodes by means of conducting-cords.

The object is to provide an electrotherapeutic device for generating properly the forms of electricity most applicable for the curing of disease and which can be placed in the hands of the public knowing that they can use it properly and that by such use it will accomplish the desired result without the intervention of an expert or any of the usual complicated therapeutic apparatus.

My invention further consists of so constructing the cabinet and generating devices that it is not necessary for the operator to open, examine, adjust, or in any way interfere with anything within the cabinet, a part of one side forming a door which when opened only discloses to view the switchboard.

My invention further consists of means for sealing up the cabinet to prevent the intrusion of inexperienced persons, so that the owner by looking at the seals can tell that the working parts of the instrument have not been disturbed.

In the accompanying drawings, Figure 1 is a view of the apparatus when not in use. Fig. 2 is a view of the apparatus when in use. Fig. 3 shows a view of the switchboard as seen when the door is open and also the method of sealing. Fig. 4 is a somewhat diagram-

matic view of the arrangement of the several parts within the cabinet and their connections with one another. Fig. 5 is a similar view with the switches in different positions.

Referring now to the accompanying drawings it will be seen that the main body of the cabinet comprises the largest compartment, and it is within this that the batteries, the dynamo-electric generator, and the wires that connect them to the switchboard are placed. The only means provided for gaining entrance to this compartment is by removing the top of the cabinet. This is held securely in place by the seal-rod 19, which passes through the cover 49, the head preventing it from passing through entirely. It extends through the bottom 51, a nut and washer 20 being put on the end thereof. A seal-wire 21 is run through a hole in the end of the bolt, and a lead seal fastened on the wires prevents the opening of the cabinet without breaking the seal-wire. The door 2 being opened discloses the compartments 3<sup>a</sup> and 3, the latter having in it, attached to the back, all the means necessary for the proper operation of the instrument. The compartment 3<sup>a</sup> provides a place in which may be put the book of directions, foot-plate, sponge, cords, &c.

Referring to Fig. 3 and the compartment 3, I provide a pair of terminal-posts 4 and 5, to which any desired form of terminals may be connected, such as a foot-plate 26 and a sponge 27, Figs. 4 and 5. Two levers 6 and 7, which move over and in contact with small buttons, regulate the current from the batteries and determine the form of the current desired. Two regulating-rods 8 and 9 regulate the dynamic current, all of which are hereinafter more fully described. A buzzer 22 provides means for interrupting the primary of the induction-coil for the faradic current and also serves as an indicator for the galvanic current should the batteries become short-circuited outside of the instrument.

Referring to Fig. 4, a circuit 37 has its extremities connected to the terminal-posts 4 and 5 and has a suitable switch 6 by which the circuit may be opened and closed. In the circuit 37 is interposed a dynamo-electric generator 23. The latter is operated by a suitable



handle 45 and movable plates 24 and 25 bridge the extremities of the field, acting as a magnetic shunt. By adjusting these plates the field will be varied, and therefore the strength of the current generated. Another circuit 38 has its terminals connected with the terminal-posts 4 and 5. This circuit is broken and one terminal is connected to a switch-arm 7, pivoted at 34. The other portion of the circuit 38 passes successively through the galvanic cells 28, 29, 30, 31, and 32 and is then connected to a contact-button 17. Between the said cells are located other contact-buttons 13, 14, 15, and 16. The switch-arm 7 is arranged to engage any of these said contact-buttons 13 to 17, inclusive, thereby cutting out any of the cells from 29 to 32, inclusive; but when the switch is advanced to a contact-button 12 the circuit will be open. When the switches 6 and 7 are in the position shown in Fig. 4, it will be seen that the cells are cut out entirely from the terminal-posts 4 and 5, while the circuit 37 is closed, including the dynamo 23. By applying the electrodes 26 and 27 and operating the dynamo a sinusoidal current will pass through the patient, the strength of which may be varied by adjusting the magnetic shunts 8 and 9. In order to produce a simple galvanic current—that is, a current that is practically continuous—the switch 6 is moved to button 11 to open circuit 37, while the switch 7 is moved to cut in the desired number of cells.

Referring to Fig. 5, to produce the faradic current an induction-coil, designated "P S," and a vibrator, preferably in the form of a buzzer 22, are used, the primary of the coil and the buzzer being interposed in series in circuit 38. A switch 47 is interposed in the circuit 41, adjacent to the terminal 4, and may be moved to open the circuit 41 or to connect the circuit to one terminal of a new set of cells 33, the other terminal of which is connected to the contact 17. It will be seen that when the switch-lever 47 is moved to the button 43 circuit 41 is opened. The secondary of the induction-coil has one terminal connected to the post 4 and the other terminal to a button 40, to which the lever 6 may be moved in contact. It will be seen that there is a contact-button to which each of the levers 6, 7, and 47 may be moved, whereby the circuit in which that particular lever is placed will be open. These contact-buttons are 11 for lever 6, 12 for lever 7, and 43 for lever 47. Upon the lever 47 being moved to the contact-button 42 it connects the circuit 41 with the cells 33 and leaves the circuit in which the primary P of the induction-coil and the buzzer 22 are placed so that it may be closed by moving the lever 7 to the button 17, the primary and buzzer then being in series with the cells 33. Upon the switch 6 being moved to the contact-button 40 the secondary of the induction-coil becomes closed upon the posts 4

and 5 and a faradic current will be transmitted to the patient. In Fig. 5 the levers are so placed that the faradic current would be produced. In Fig. 5 in order to deliver a galvanic current to the patient the lever 47 is placed on the button 44, the lever 6 is placed on the button 11, and the lever 7 is moved to the buttons 13 14, &c., to cut in the desired number of cells. For delivering a sinusoidal current the lever 47 is placed on button 43, the lever 7 is placed on button 12, and the lever 6 being placed on button 10 it is only necessary to turn the handle 45 of the dynamo to produce the current.

It is evident that numerous slight changes might be made in the general arrangement and combinations of parts, also in the design of the cabinet, without departing from the spirit and scope of my invention, and hence I would have it understood that I do not limit myself to the precise details herein shown and described; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters of Patent, is—

1. In a device of the character described, consisting of a cabinet having three compartments, the largest containing all the generating devices, a door on one side disclosing the smaller compartments in one of which is the switchboard, with switches, buzzer, regulating-rods and binding-posts, the combination of a pair of terminals, a circuit having its ends connected with the terminals, a dynamo-electric generator interposed in said circuit, means for adjusting the current by one or more magnetic shunts, a second circuit connected to said terminals, a source of galvanic current interposed in said circuit, means for cutting out either of said circuits, and crank or other means for driving the dynamo from the outside.

2. In a device of the character described, consisting of a cabinet having three compartments, the largest containing all the generating devices, a door on one side disclosing the smaller compartments in one of which is the switchboard, with switches, buzzer, regulating-rods and binding-posts, the combination of a pair of terminals, a circuit having its ends connected with the terminals, a dynamo-electric generator interposed in said circuit, means for adjusting the current by one or more magnetic shunts, a second circuit connected to said terminals, a source of galvanic current interposed in said second circuit, a third circuit having its ends connected with said terminals, a source of faradic current interposed in third circuit, means for cutting out either of said circuits, and crank or other means for driving the dynamo from the outside.

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Witnesses:

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